

Reduce Frequency of Replacing Modules in Turbine Meters



Partner Reported Opportunities (PROs)
for Reducing Methane Emissions

PRO Fact Sheet No. 302

Applicable sector(s):

☐ Production ☐ Processing ☒ Transmission and Distribution

Partners reporting this PRO: Columbia Gas Transmission

Other related PROs: Replace Bi-Directional Orifice with Ultrasonic Meters

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☒
Tanks ☐
Valves ☐
Wells ☐
Other ☐

Technology/Practice Overview

Description

Turbine meters are used to accurately measure the volume of gas received to, or delivered from pipelines. To assure an accurate measurement, the module (internal rotating element that does the actual flow measurement) has to be periodically removed for servicing. To remove and replace the module, the meter-run is blocked-in and the high-pressure natural gas in the piping section is vented to the atmosphere, resulting in methane emissions.

This partner reported modifying his practice of changing the internal modules from a 2-year frequency to every 3 years. By doing so, the company reduces the methane emissions by one-sixth (one-third of the meters every year, rather than one-half) on hundreds of meters, and saves labor costs.

Operating Requirements

May require revision of agreements with customers or public utility commissions on metering standards.

Applicability

This applies to all custody-transfer turbine meters requiring very accurate gas flow measurement.

Methane Savings: 27 Mcf per year

Costs

Capital Costs (including installation)

☒ <\$1,000 ☐ \$1,000 – \$10,000 ☐ >\$10,000

Operating and Maintenance Costs (annual)

☒ <\$100 ☐ \$100-\$1,000 ☐ >\$1,000

Payback (Years)

☒ 0–1 ☐ 1–3 ☐ 3–10 ☐ >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Methane Emissions Reductions

Methane savings are based on a transmission pipeline with 500 turbine meters. A partner has reported savings of 38 Mcf per year on 519 meters, ranging in size from 4-inch to 12-inch.

Economic Analysis

Basis for Costs and Savings

Methane savings of 27 Mcf per year are based on 500, 8-inch turbine meters in a 900-psig system, replaced every 3 years, rather than 2 years. The volume of gas in the turbine meter run assumes the block valves are spaced 11 pipe-diameters up and downstream of the meters.

Discussion

The primary benefit of this practice is to save labor costs. With no capital requirements and reduced labor, the payout is immediate.